

# The Dangerous Substances and Explosive Atmospheres Regulations (DSEAR)

## 2002

### **Background**

These regulations arise from the implementation of the safety provisions of the Chemical Agents Directive and the Explosives Atmospheres Directive (ATEX 99/92/EC). They set specific requirements for identifying hazardous substances and areas, identifying the risks associated with them, and implementing controls including the selection of equipment for use in potentially explosive atmospheres. As the Amendment for the Regulations came into force on 1<sup>st</sup> July 2003, we have included some background to the Regulations for Members files.

### **Application**

They apply at most workplaces where a dangerous substance is present or could be present. The Regulations are concerned with physical risks arising from the physico-chemical or chemical properties of substances or mixtures. The main risks addressed are therefore fire, explosion, thermal decomposition or exothermic reaction. Health risks are not covered by the Regulations (these are dealt with by the Control of Substances Hazardous to Health Regulations 2002) although oxygen depletion arising from say a fire, would be.

Some examples of dangerous substances are given within the regulations and guidance such as; petrol, solvents, LPG, varnish and dusts, which could be formed from processes or industry sectors that have milling or sanding operations.

Numerous items of old law have been repealed including Section 31 of the Factories Act 1961 and the Highly Flammable Liquids and Liquefied Petroleum Gases Regulations 1972. They have influenced or affected other industry related legislation such as that associated with Pipelines, Offshore, Gas Installations, Boreholes, Chemical, Transportation, Signs & Labels and Mines and Quarries.

### **Employer's Duties**

Before beginning work with a dangerous substance it is a requirement to **carry out a risk assessment**, to review it as necessary and to record the significant findings where 5 or more people are employed. Records must include the usual risk assessment issues (as required by Reg.3.MHSWR 1999), and the precautions in place (or to be put in place) and specific information relating to the DSEAR requirements including information on zone classification and protected equipment. Employers should also consider:

- The hazardous properties of the substance,
- The safety information provided by the supplier,
- The circumstances of the work, the amounts used, the process and interaction or combined effects of more than one Dangerous Substance (DS), the arrangements for safe storage, transport and handling of the DS or waste containing a DS,
- Activities where there is a high level of risk such as maintenance,
- The effectiveness of measures that are taken,
- The likelihood of an explosion and its persistence or duration/effect,
- The likelihood that ignition sources or electrostatic discharges will be present,
- The scale of the anticipated effects of a fire or explosion,
- Other places which are or could become connected by openings to places in which explosive atmospheres can occur,
- Additional safety information needed by the employer to complete the risk assessment.

## Elimination or Reduction of Risks from Dangerous Substances

There is a requirement to eliminate risk or, where this is not reasonably practicable, reduce risk by the application of a specified hierarchy of control (described in Regulation 6 of DSEAR 2002) supported by the application of appropriate risk mitigation measures such as signage and explosion relief. The employer is expected to control those risks which cannot be eliminated and would be expected in order of priority to:

1. Reduce the quantity of dangerous substances to a minimum,
2. Avoid the release or minimise the release of dangerous substances,
3. Control the release of a DS at source,
4. Prevent the formation of an explosive atmosphere which should include the application and use of appropriate ventilation,
5. Ensure that the release of a DS that gives rise to risk is suitably collected, safely contained, removed to a safe place or rendered safe by other appropriate means,
6. Avoid all ignition sources including electro-static discharges, (see also the requirements of Equipment & Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 1996) and avoid adverse conditions that could cause dangerous substances to give rise to harmful physical effects,
7. Segregate incompatible dangerous substances.

The employer is further expected to mitigate the detrimental effects of fire or explosion or the other harmful effects such as inhalation of toxic by-products from the energy release of dangerous substances by:

- Reducing the number of employees exposed to a minimum,
- Avoiding the propagation of fires or explosions,
- Providing explosion pressure relief measures where appropriate,
- Providing explosion suppression equipment where appropriate,
- Providing plant that can withstand the likely pressures from an explosion.

In addition, employers should consider:

- Where explosive atmospheres may occur (including combustible dusts) **zone classification must be undertaken** and any equipment used in zoned areas must meet the appropriate criteria. Such areas should display the EX warning symbol and the explosion protection controls must be verified by a competent person before the area is first brought into use.
- **Appropriate anti-static clothing** should be provided for use in zone-classified areas.
- **Appropriate warning systems** and emergency procedures must be developed, communicated, implemented and practiced at intervals.
- **Information, instruction and training** dealing with risks and risk control measures must be provided to employees.
- The contents of containers and pipes containing dangerous substances must be clearly identifiable.
- An employer who is responsible for a workplace must co-ordinate the measures needed for meeting these regulations in situations where there is more than one employer at the workplace - whether on a permanent or temporary basis.

## What to do Now?

If a risk assessment has already been undertaken under the Management of Health and Safety at Work 1999 and excludes the risks from fire or explosions and other events from dangerous substances, the assessment requires reviewing. If no assessment has been carried out at all, it is a legal requirement to do so and to include the effects of DSEAR.

As required by MHSW Regulations 8 and 9, consideration must also be given to existing arrangements; a review of measures and the requirements for serious and imminent danger, and liaison with emergency services.

It is also necessary to review the control measures and consider (Regulation 6 DSEAR) the specified hierarchy of measures set down. Do the current controls conform? Is it possible to eliminate avoid or substitute the dangerous substances? Is it possible to eliminate all sources of ignition?

To ensure the availability of suitable equipment to deal with accidents and emergencies, appropriate plans and procedures are required.

Employees need to be provided with adequate information and training. The effects and characteristics of a fire compared to an explosion are different, so therefore procedures/resources and training in them must reflect this.

**From the 1st of July 2003** there is a duty to record on the risk assessment, details of any areas zoned as being hazardous due to the likely presence of explosive atmospheres created by dangerous substances.

It is also necessary to classify places where explosive atmospheres may occur into zones and mark the zones where necessary. This duty is being phased in and is dependant upon when the workplace is first used:

- Where a workplace is already in use before July 2003, then that workplace must achieve the additional requirements by July 2006.
- Where the workplace is already in use before July 2003 but modified before July 2006, the workplace must meet the requirements from the time the modification takes place.
- A workplace coming into use for the first time after 30th June 2003 must meet the requirements from the time it comes into use.

Further information on the new amendments can be obtained by calling 01223 438205